REMARKS

Applicant appreciates the thoroughness with which the Examiner has examined the above-identified application. Reconsideration is requested in view of the amendments above and the remarks below.

Applicant has amended the specification to correct the clerical error noted by the Examiner, and claim 1 to correct the misspelling inadvertently introduced in the previous amendment. No new matter is added.

The present invention provides, with no conventional spheroidization annealing, a quenched and tempered steel wire having the composition, tensile strength and microstructure defined in claim 1 which enables manufacture of a desired product with superior cold forging characteristics. As described in the specification, particularly in paragraph 0043, the claimed steel wire is obtained by the process of "heating to a temperature of Ac3 [A_3] transformation points or higher," "cool[ing] with water," and tempering by "heating temperature and time [ ] adjusted in the range of 200°C to Ac1 [A_1] transformation points." As defined in claim 1, the steel wire produced by the process has a structure of martensite base with spheroidized carbide, with the percent spheroidization of carbides not less than 30%.

Claims 1-3 stand rejected on page 3 of the Office Action under 35 USC § 103 as being obvious from Kanisawa et al. U.S. Patent No. 6,547,890. While claim 4 is stated on the cover sheet as being rejected, but no mention is made in the body of the Office Action, applicant assumes that claim 4 is rejected on the same basis as claims 1-3. Applicant respectfully traverses this rejection. A careful review of the cited reference, Kanisawa et al. U.S. Patent No. 6,547,890 reveals that it does not in fact disclose the

presence of spheroidized carbides with a martensite base in steel wire, as claimed in the instant application.

The purpose of the Kanisawa patent is to "provide a steel wire rod for cold forging which can be spheroidizing-annealed in an as hot rolled state without preliminary drawing and rendered highly ductile through the spheroidizing annealing ... ." Kanisawa, column 1, lines 61-64. Kanisawa teaches that to achieve the good spheroidized structure, "a bainite or martensite structure containing evenly distributed carbon was the most suitable for the purpose." Kanisawa, column 2, lines 7-8. The Kanisawa patent provides a hot rolled and tempered wire which enables, with no preliminary drawing, easier spheroidizing annealing by controlling the microstructure as martensite, bainite, or bainite-martensite. *See* column 6, lines 8-11 and 18-21. Fig. 2(a) shows the martensitic structures of the hot-rolled materials of the Kanisawa invention before spheroidizing annealing, while Fig. 3(b) shows the materials after spheroidizing annealing. This is confirmed in the specification at column 3, lines 19-28 and column 4, lines 23-51.

The Kanisawa patent teaches the production of wire rod by the sequential steps of low temperature rolling, rapid cooling, and tempering to achieve the martensite, bainite, or bainite-martensite structure. *See* column 5, line 62 through column 6, line 41. The wire rod may then be subject to spheroidizing annealing. See Example 1, column 6, lines 49-67. Kanisawa's Table 3 confirms this by describing the microstructure of the as-rolled material in the "inventive specimens" as "M" (martensite) or "Zw" (bainite). No spheroidized carbides are indicated in the as-rolled structure. The degree of spheroidizing given for these same specimens is only after spheroidizing annealing, and is not a description of the microstructure of the as-rolled material. See

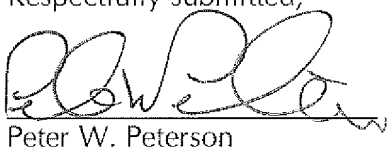
column 6, line 52 through column 8, line 16. There is no martensite disclosed as remaining after annealing.

Kanisawa discloses that it is advantageous to begin with a martensite or bainite as rolled wire structure, before spheroidizing annealing the wire. Kanisawa never discloses a wire product in which bainite and spheroidized carbides are present in the material at the same time. Thus, there is no disclosure of a quenched and tempered steel wire having a structure of a martensite base and carbides precipitated therefrom, with a percent spheroidization of carbides not less than 30%, as in the present invention.

As shown above, the present invention shows a considerable difference compared to the prior art with respect to purpose and processing, and as a result has a different structure as well. Since the Kanisawa reference does not suggest a processing or heat treatment that provides a martensite base in a steel wire microstructure which also includes spheroidized carbides, this reference cannot render the present invention obvious to one of ordinary skill in the art.

It is respectfully submitted that the application has in a condition where allowance of the entire case is proper. Reconsideration and issuance of a notice of allowance are respectfully solicited.

Respectfully submitted,



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